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09/702,505	10/31/2000	Donald M. Gray III	14531.74	9995

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EXAMINER	
BRIER, JEFFERY A	

ART UNIT	PAPER NUMBER
2672	13

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/702,505	GRAY ET AL.	
	Examiner	Art Unit	
	Jeffery A Brier	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-18 and 20-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7, 9-18, and 20-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 01/19/04 has been entered.

2. The amendments made to claims 1 and 7 overcomes the 35 U.S.C. 112 first paragraph rejection set forth in paper no. 11.

3. The amendments made to claims 7, 15 and 21 overcomes the 35 U.S.C. 112 second paragraph rejection set forth in paper no. 11.

Response to Arguments

4. Applicant's arguments filed 01/19/04 have been fully considered but they are not persuasive. At pages 11 to 14 applicant presents arguments concerning the prior art rejection. The argument in the sentence spanning pages 11-12 is not persuasive because (a) the lists are slices, (b) it clearly teaches spans, (c) reading each span without a double buffer is taught at section 12 which teaches buffers of input data streams and minimizing memory and does not teach using double buffering which doubles the memory needed, (d) the alpha values identify the opaque and transulcent, (e) alpha values allow the blending unit to blend the data streams, (f) when a portion is opaque the opaque data stream is read into the output data stream without reading the obscured data stream into the output data stream. The argument concerning double buffering on page 12 is not persuasive because the article discusses in section 12.4 paragraph 2 video memory and does not mention double buffering which requires double the memory. The argument concerning identifying opaque and translucent

portions of an image and reading data corresponding to the opaque and translucent portions of the image at page 12 is not persuasive because the alpha value identifies translucent and opaque portions, this claim is a method claim claiming a step of identifying but does claim how the identifying is performed, thus, the broad claim language is fully met by the article. The argument in the last paragraph of page 12 is not persuasive because the blending unit of the Burma chip will read the blend and display the translucent portions. The argument in the first paragraph of page 13 is not persuasive because the negative limitation is very broad and is taught by the article because when the alpha value is opaque then that data stream is read into the output data stream and the other data streams are not read into the output data stream, see figure 7.2. The argument in the third paragraph of page 13 is not persuasive because the article states in section 12.4 paragraph 2 video memory and does not mention double buffering which requires double the memory. The argument spanning pages 13-14 is not persuasive because the combination of the article and Perlman teaches applicant claimed invention. Since the article discusses flicker filtering on a span basis then in view of Perlman it would have been obvious to use the previous span data, current span data and the next span data to reduce filter in the image on the spans without necessarily filtering the reaming spans on the line.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-6, 9-14, 16 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by the newly cited article titled The Microsoft Interactive TV System: An Experience Report by Michael B. Jones, July, 1997, Technical Report MSR-TR-97-18. A very pertinent portion of this article is reproduced below.

3. Set-Top Box Hardware

The set-top box used in this trial was designed by Microsoft and manufactured by NEC. It uses a standard PC backplane, a 90 MHz Pentium processor (but clocked at 75 MHz), and a PCI bus. An NEC PCI ATM card is being used in the trial. Unlike a PC, the set-top box contains no disk, keyboard, mouse, or BIOS.

Custom video and audio hardware for the set-top box contains a MPEG-2 decoder, NTSC (the U.S. and Japanese analog television encoding standard) encoders & decoders, a tuner, and an audio mixer. A custom graphics chip called the Burma is capable of dynamically scaling and alpha blending (semi-transparently overlaying) multiple video and computer-generated graphics surfaces using different pixel representations into a single, flicker-filtered output image in real time. (Flicker filtering reduces the flicker associated with NTSC's interlaced display and slow refresh rate.)

The set-top box also has a bi-directional infrared port for communicating with the hand controller, a smart card interface, a serial port (used for debugging), a microphone input, auxiliary audio & video inputs, and separate audio and video outputs for TV and VCR.

The processor has an 8Ki/8Kd on-chip cache. There is no second level cache. The system was designed for 8MB of RAM, although it was typically used with 16MB and was eventually deployed with 24MB (more about this in section 12.4). The graphics system uses 2MB of RAMBUS memory, plus the MPEG-2 decoder contains 2MB of RAM. The system has 1/2 MB of boot ROM.

3.1 Burma Graphics Chip

The Burma graphics chip is central to Microsoft's interactive TV set-top box. In particular, it provides us with the capability of combining real-time video with dynamic computer-generated graphics under programmatic control.

The primary job of the Burma is to dynamically composite sets of video and computer-generated images into an output image. Images are represented as lists of spans, where a span is a horizontal line of pixels. Since spans can be of different lengths and have different origins, Burma images need not be rectangular.

Pixels can be represented in these data formats: 8-bit palletized color, 8-bit palletized color plus 8-bit alpha value, 16-bit Red-Green-Blue (RGB) (5R:6G:5B), 32-bit Luminance-Chrominance (YCrCb) pixel pairs (8-bit Y_0, 8-bit Y_1, 8-bit shared Cr, 8-bit shared Cb), 24-bit RGB, and 24-bit RGB plus 8-bit alpha. Those formats without per-pixel alpha values have per-span alpha values. Flicker filtering can be controlled on a per-span basis.

Major functional blocks within the Burma include two video capture engines, a color space converter, a static composition engine (a blitter) with source transparent color checking, a dynamic composition engine (performs alpha blending), a flicker filter, video output, a PCI interface with pre-fetcher and a RAMBUS interface.

The Burma was designed to be clocked at 62.5MHz and is actually clocked at 50MHz. The 8-bit RAMBUS channel was designed to be clocked at 250MHz, and was actually clocked at 200MHz (4 × 50 MHz). RAMBUS transfers occur on both up and down transitions, giving an ultimate achievable speed of 500Mbytes/second or a BLT rate of 250Mbytes/second. In practice, about 50% of that is achievable with the Burma.

The Burma chip is implemented as a custom ASIC fabricated using a .35 micron process. The chip size is 8.68 × 8.68 mm. It contains 252K total gates, or roughly 1 million transistors. The logic is 140K gates, plus 56Kbits of RAM.

A detailed analysis of the claims.

Claim 1:

The article teaches in a system including a display device for displaying an image (*interlaced television, section 3, and figures 2-1, 7-1, 7-2, 7-3*), the image having a plurality of sources (*sections 3 and 3.1 and figures 2-1, 7-1, 7-2, 7-3*), a method for compositing the image (*sections 3 and 3.1 and figures 2-1, 7-1, 7-2, 7-3*), the method comprising the acts of:

dividing the image into slices (*note the lists of spans for an image described in section 3.1 second paragraph. Each list is a slice.*), each slice including at least one line (*section 3.1 second paragraph describes each span as a horizontal line of pixels and each image has at least one line of pixels*);

dividing each line in each slice into at least one span (*sections 3 and 3.1 describe representing images as lists of spans, section 3.1 second paragraph*), wherein each span has at least one associated source (*each span is for one of the images forming the TV image, thus, the*

span has at least one source) included in the plurality of sources and each line in each slice has the same at least one associated source (*if the line has a single span then the article clearly teaches this, if the line has more than one span but there is only one line of the at least one lines in a slice then section 3.1 second paragraph last line teaches a two spans having the same source since it teaches they maybe the same or different*);

for each span in each line, reading data from the associated source without using a double image buffer (*section 2.1 last paragraph, section 3.0 last paragraph, section 4 paragraph 8, section 6.3 second paragraph, section 12.4 describes memory used in the MITV which uses buffers to buffer the sources but does not use a double image buffer*);

identifying portions of the image that are opaque (*section 3.1 third paragraph lists the types of image data the Bruma chip can process, the pixel data or per span alpha data with alpha values indicating no translucence determines portions of the image which are opaque*) and portions of the image that are translucent (*section 3 second paragraph and section 3.1 paragraphs 3 and 4 describes alpha blending depending upon the alpha value, thus, pixel data with alpha values indicating translucence indicates portions that are translucent*);

for each portion of the image that is translucent, reading, blending and displaying the data from the sources corresponding to the translucent portion (*pixel data with alpha values instructs the Burma chip that more than one source is present for this portion of the image*);

for each portion of the image that is opaque, reading only from the sources that corresponds to the opaque portion and that would be visible within the opaque portion during display of the image (*page 2 lines 8-9 describes electronic program guide, figure 7-2 illustrates an EPG with the image of the video for a channel shown in the upper right of the screen shot is opaque and it is from one source and where the EPG characters are opaque and read from a different source*), and without reading data from any sources that would be obscured in the opaque portion during display of the image (*images of the video from the past and the future are not read from the source, only the current image is read, images of characters that are not displayed in the EPG are not read from the source of characters, etc, this negative limitation is very broad*).

Claim 2:

This article describes at page 12 first column lines 5-10 loading each associated source in memory.

Claim 3:

The lists are a control structure having context information.

Claim 4:

The lists inherently have the broadly claimed headers since an identifier for each image, each list, each line, and their source is necessary.

Claim 5:

Section 3.1 second paragraph describes lists of span each having a horizontal lines of pixels of varying length, therefore, contiguous pixel data for a line is read from the associated source.

Claim 6:

Sections 3 and 3.1 describe blending which requires two or more sources of pixel data. If there were only a first source then there would be no other pixels to blend with the pixel's from the first source of pixels.

Claim 9:

The article at page 3 second column line 8 describes flickering as controlled on a span basis, thus, vertically adjacent spans are filtered to reduce flicker.

Claim 28:

This claim depends upon claim 1 and it claims the opaque portion comprises a span and the translucent portion comprises a different span. In the article any pixel may be translucent or opaque depending upon the alpha values associated with that pixel, thus, the image can have a line span that is translucent and a different line span that is opaque.

Claim 10:

This article teaches in a system including a display device for displaying; an image, each image being generated from one or more sources, each source having data, a method for compositing the image, the method comprising the acts of:

generating a control structure having context information (*the lists are a control structure having context information*) describing the image, wherein the context information identifies the one or more sources (*inherently the list identifies the source*);

reading the data of the one or more sources according to the context information without storing a composite image of the data in a double image buffer (*section 2.1 last paragraph, section 3.0 last paragraph, section 4 paragraph 8, section 6.3 second paragraph, section 12.4 describes memory used in the MITV which uses buffers to buffer the sources but does not use a double image buffer*); and

displaying the read data on the display device as the data is read from the one or more sources (*as the data is read the Burma chip processes the video and sends it to video memory for display on the TV*).

Claim 11:

Section 3.1 describes the list defining an image as having spans that can be of different lengths then this article teaches at last two images with each image having a slice having several lines with each line of the image being a span on the TV line and each span has a source.

Claim 12:

The lists inherently have the broadly claimed headers since an identifier for each image, each list, each line, and their source is necessary.

Claim 13:

This article describes at page 12 first column lines 5-10 loading each associated source in memory.

Claim 14:

Sections 3 and 3.1 describe blending which requires two or more sources of pixel data. If there were only a first source then there would be no other pixels to blend with the pixel's from the first source of pixels. In section 3.1 third paragraph 3 types of RGB is

described, these three RGB sources are a first color space, and in the same paragraph is described one YcrCb and in section 3 second paragraph MPEG and NTSC are described, these three sources are second color space.

Claim 16:

The article at page 3 second column line 8 describes flickering as controlled on a span basis, thus, vertically adjacent spans are filtered to reduce flicker.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the newly cited article titled The Microsoft Interactive TV System: An Experience Report by Michael B. Jones, July, 1997, Technical Report MSR-TR-97-18 and in view of Perlman et al., U.S. Patent No. 5,745,909, already of record.

Claim 17:

This article teaches in a system including a display device for displaying an image, a method for reducing the flicker of a portion of the image (*see section 3.1 paragraph 3 line 9*), the method comprising the acts of:

reading data from a source, wherein the data is the portion of the image that is subject to flickering, and wherein the data defines a single span of a plurality of spans that are included in a line (*see section 3 paragraph 2, see section 3.1 paragraph 3 lines 9 and 10*);

reading previous data from the source, wherein the previous data corresponds to a previous span in a previous line, wherein the previous span is vertically adjacent to the span (*to reduce flicker in interlaced TV displays at least one of the previous and next lines are filtered with the current line*) and comprises only one of a plurality of spans in the previous line (*section 3.1 paragraph 3 line 9 which describes flicker filtering on a span basis rather than flicker filtering all of the lines on the TV*);

reading next data from the source, wherein the next data corresponds to a next span in a next line and wherein the next span is vertically adjacent to the span (*to reduce flicker in interlaced TV displays at least one of the previous and next lines are filtered with the current line*) and comprises only one of a plurality of spans in the next line (*section 3.1 paragraph 3 line 9 which describes flicker filtering on a span basis rather than flicker filtering all of the lines on the TV*); and

blending the previous span data, the span data subject to flickering, and the next span data , without blending the entire line, previous line and next line, (*section 3.1 paragraph 3 line 9 describes flicker filtering on a span basis*

rather than flicker filtering all of the lines on the TV) and such that the flicker that would otherwise exist at the portion of the image corresponding to the span is reduced (*section 3 paragraph 2 lines 8-11*).

The article's description of the Burma chip did not indicate which type of flicker filter was used.

Perlman teaches a flicker filter that filters the previous and next lines with the current line.

It would have been obvious to one of ordinary skill in the at to use the flicker filter of Perlman in the Burma chip so a good flicker free image will be displayed.

Claim 18:

Inherent to the article's system. Each line is a data stream. Each line that enter Perlman's filter is a data stream.

Claim 19:

Section 3.1 describes various formats for the pixels in the third paragraph. In the fourth paragraph a color space converter is described.

The article does not appear to describe in what order the input pixels are blended and color space converted.

It would have been obvious to one of ordinary skill in the art to blend for example two RGB format pixels prior to color space conversion to YcrCb color space because this will save processing time due to only having to perform color space conversion once after blending instead of color space conversion twice, once for each pixel stream, and then blending, thus, blending first is two processes and blending after is three processes the Burma chip would have to perform.

Claim 20:

The TV is interlaced and displays images using interlaced fields, the span included in the line is displayed on the TV.

9. Claims 7, 15, and 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the newly cited article titled The Microsoft Interactive TV System: An Experience Report by Michael B. Jones, July, 1997, Technical Report MSR-TR-97-18.

Claim 21:

Claim 21 claims blending units, directing data streams having the same color space to blending units having an associated color space for blending, and blending the outputs into an image data stream.

Section 3.1 describes various formats for the pixels in the third paragraph. In the fourth paragraph a color space converter is described. The output of the Burma chip is a

stream of pixels, thus the output of the Burma chip is blended into an image data stream of many pixels.

The article does not appear to describe in what order the input pixels are blended and color space converted.

It would have been obvious to one of ordinary skill in the art to blend for example two RGB format pixels prior to color space conversion to YcrCb color space because this will save processing time due to only having to perform color space conversion once after blending instead of color space conversion twice, once for each pixel stream, and then blending, thus, blending first is two processes and blending after is three processes the Burma chip would have to perform.

Claim 22:

See section 3.1 third paragraph.

Claim 23:

A double buffer is not used. Section 2.1 last paragraph, section 3.0 last paragraph, section 4 paragraph 8, section 6.3 second paragraph, section 12.4 describes memory used in the MITV which uses buffers to buffer the sources but does not use a double image buffer.

Claim 24:

Section 3.1 second paragraph describes the line having more than one span, thus, data streams for different spans on one line are offset in time and display space, thus, after the data stream is received its received place may not be the same as its displayed space and will need to be offset timewise and space wise.

Claim 25:

The centering the data streams around zero is a broad limitation and is met by decoding the data streams described in section 9.4 since the pixel data is encoded with additional information for transmission across the network and then decoded back to pixel data, thus, it must be put back to where it started or in other words the data streams will need to be centered to where they were prior to transmission, centered around.

Claim 26:

This claim claims to zero a data stream that has color space that does not correspond to any of the color spaces that can be processed by the blending units. This is an inherent function of any system that receives erroneous data. If the data is not processable by the system it will be ignored or zeroed.

Claim 27:

When alpha blending is performed the pixels are multiplied by the alpha values that are present in the data stream.

Claims 7 and 15:

These dependent claims are similar to independent claim 21 and are rejected for the same reasons given for claim 21.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffery A. Brier whose telephone number is (703) 305-4723. The examiner can normally be reached on M-F from 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi, can be reached at (703) 305-4713).

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Jeffery A Brier
Primary Examiner
Art Unit 2672